

U.S. EPA Region 1
Explanation of Significant Differences
Dover Municipal Landfill
April 2022

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**APRIL 2022 EXPLANATION OF SIGNIFICANT DIFFERENCES
DOVER MUNICIPAL LANDFILL SUPERFUND SITE
DOVER, NEW HAMPSHIRE**

I. INTRODUCTION

A. Site Name: Dover Municipal Landfill Superfund Site (the Site)
NHD980520191

Location: Town of Dover, Strafford County, New Hampshire

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency (EPA)

Support Agency: New Hampshire Department of Environmental Services (NHDES)

C. Legal Authority

This Explanation of Significant Differences (ESD) is being issued for the Dover Municipal Landfill Superfund Site (“Site”) to document changes in the remedy originally selected in the 1991 Record of Decision (“1991 ROD”), as amended by the 2004 Amended Record of Decision (“2004 AROD”), and further modified by the 2009 Explanation of Significant Differences (“2009 ESD”).

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617(c), 40 C.F.R. § 300.435(c) of the National Contingency Plan (NCP), and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, if EPA determines that differences in the remedial action being taken at a site significantly change but do not fundamentally alter the remedy selected in the Record of Decision with respect to scope, performance, or cost, EPA shall publish an ESD. EPA has determined that the modifications set forth in this ESD significantly change but do not fundamentally alter the remedy selected in the 1991 ROD, as amended by the 2004 AROD, and further modified by the 2009 ESD.

In accordance with Section 300.825(b) of the NCP, EPA has voluntarily chosen to hold a public comment period on this draft document from April 27, 2022, to May 11, 2022, to ensure that all interested parties have an opportunity to provide input to EPA before its final decision on this modification to the remedy.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

1. Since 2009, the emerging contaminant 1,4-dioxane has been monitored and detected in the Site's groundwater at concentrations ranging from 0.24 micrograms per liter ($\mu\text{g}/\text{L}$) to 900 $\mu\text{g}/\text{L}$. Most recently, in January, April and December 2020, 1,4-dioxane was also detected in surface water from streams flowing from the landfill towards the Bellamy Reservoir, a major drinking water source for the City of Portsmouth, at concentrations ranging from 0.57 to 2.2 $\mu\text{g}/\text{L}$. Surface water samples from the Bellamy Reservoir's drinking water intake have been collected annually since 2019 but no detections (detection limit of 0.25 $\mu\text{g}/\text{L}$) have been observed.

Most of the concentrations observed in the groundwater exceed EPA's acceptable risk range for 1,4-dioxane in drinking water of 0.46 to 46 $\mu\text{g}/\text{L}$ ¹. Currently, there is no federal drinking water standard for 1,4-dioxane. However, the New Hampshire Department of Environmental Services (NHDES) has promulgated an Ambient Groundwater Quality Standard (AGQS) for 1,4-dioxane of 0.32 $\mu\text{g}/\text{L}$. Most of the 1,4-dioxane concentrations observed in the groundwater at the Site also exceed this AGQS. The contaminant has been found in the groundwater within the landfill's footprint and not at locations upgradient from it. Concentrations exceeding both the EPA acceptable risk range and the NHDES AGQS have been observed at and beyond the point of compliance for the Source Control Remedial Action (SCRA). These exceedances have also been observed within and beyond the NHDES Groundwater Management Zone (GMZ)², and both groundwater and surface water have the potential to impact the Bellamy Reservoir. Due to these exceedances of EPA's acceptable risk levels, EPA is formally incorporating 1,4-dioxane into the remedy as a contaminant of concern (COC) to ensure the remedy remains protective of human health and the environment. By incorporating 1,4-dioxane into the remedy, EPA is formally adopting the current NHDES AGQS of 0.32 $\mu\text{g}/\text{L}$ as the Cleanup Level.³

2. The 1991 ROD identified Tetrahydrofuran (THF) as a COC in groundwater. In 2015, NHDES raised the AGQS for Tetrahydrofuran (THF) from 154 $\mu\text{g}/\text{L}$ to 600 $\mu\text{g}/\text{L}$. Since the remedy is still considered protective, and since the new NHDES AGQS falls within EPA's acceptable risk range, EPA is modifying the Cleanup Level of THF in this ESD to reflect the current NHDES AGQS of 600 $\mu\text{g}/\text{L}$.

¹ This range is EPA's carcinogenic risk range equating to 10-6 to 10-4 risk, respectively. These values are calculated using the EPA Regional Screening Level Calculator under the standard default assumption for residential groundwater/tapwater, and hazard quotient of 0.1 and target risk of one in a million (10-6) and one in ten thousand (10-4).

² The NHDES GMZ is an area within which the state requires that groundwater use be controlled and/or monitored due to the presence of groundwater contaminants that exceed the State's Ambient Groundwater Quality Standards ("AGQS"). NH Env-Or 602.14. EPA uses the GMZ to establish an area where groundwater restrictions are required due to exceedances of EPA's cleanup levels or acceptable risk levels.

³ Data from the last Annual Report, dated April 12, 2021, show exceedances of EPA's acceptable risk range beyond the Site's point of compliance (POC) or toe of the landfill, and beyond the current southern boundary of the NHDES GMZ. In the area between the POC and the GMZ boundary, exceedances ranged from 52 $\mu\text{g}/\text{L}$ to 820J $\mu\text{g}/\text{L}$; and beyond the GMZ the exceedances have ranged from 54 to 420 $\mu\text{g}/\text{L}$.

3. A change to terminology regarding groundwater cleanup levels. Specifically, Interim Cleanup Levels identified in the 1991 ROD and subsequent decision documents are now considered Cleanup Levels.
4. Clarification on the approach that will be utilized to determine that groundwater Cleanup Levels have been attained; the groundwater restoration remedy is protective; and support for a determination that groundwater restoration is complete.

This ESD will serve as the CERCLA decision document to record the changes to the remedy detailed herein that do not fundamentally deviate in terms of scope, performance, or cost, from the remedy described in the 1991 ROD, as amended by the 2004 AROD and further modified by the 2009 ESD.

E. Availability of Documents

This ESD and supporting documentation shall become part of the Administrative Record for the Site. The ESD, the supporting documentation for the ESD, and the Administrative Record are available to the public for review on-line at
<http://www.epa.gov/superfund/dover>.

EPA no longer sends paper files to repositories, only on-line access to the Administrative Record is provided through the link above at the repositories. Individuals wishing to access the Administrative Record at a particular repository should check operating status, as some repositories may be closed.

For assistance with access or for questions, please contact (note that because of government COVID-19 restrictions EPA's Offices may not be open to the public during the comment period):

SEMS Records & Information Center
U.S. EPA Region 1 - New England
5 Post Office Square, Suite 100 (mail code: 02-3)
Boston, MA 02109-3912
(617) 918-1440 (phone)
R1.Records-SEMS@epa.gov (email)

Dover Public Library
73 Locust Street Dover, New Hampshire 03820
Phone: (603) 516-6050

Open Mon - Thu 9 am - 8:30 pm, Fri - Sat 9 am - 5 pm, and Sunday 1 pm- 5 pm.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND SELECTED REMEDY

A. Site History and Contamination Problems

The Dover Municipal Landfill Superfund Site (the “Site”) is located to the west of Tolend Road in the western corner of the City of Dover, New Hampshire. The Site is bordered by rural, residential properties along Tolend Road to the north and undeveloped forested wetlands to the south, east, and west. The Cocheco River and Bellamy Reservoir are located approximately 600 feet northeast and 1,500 feet south of the Site, respectively.

The Cocheco River was designated into the NH Rivers Management & Protection Program in 2009. Figure 1A shows the general setting of the Site. The Bellamy Reservoir serves as a drinking water supply for the City of Portsmouth, and portions of Newington, Greenland, New Castle and Rye. The City of Dover draws approximately 40% of its drinking water from wells in the Bellamy Reservoir watershed.⁴

The landfill covers approximately 50 acres and, contrary to typical landfill profiles, is quite flat and covered mostly in grasses, but has stands of poplar trees on the older portions of the landfill. A detailed description of the Site is contained in the 2004 AROD.⁵ Features of the Site and surrounding area are shown on Figure 1B.

The Site was placed on EPA’s National Priority List on September 8, 1983. Following a Remedial Investigation and Feasibility Study, EPA issued the 1991 ROD which selected a remedy (remedy SC-7/7A) that had two components, Source Control (SC) and Management of Migration (MOM). The SC component consisted of capping the approximately 50-acre landfill with a Resource Conservation and Recovery Act Subtitle C (RCRA-C) cap and installing a system of trenches and groundwater extraction wells to dewater the landfill. The MOM component addressed two groundwater contaminant plumes found to be migrating from the landfill: the Eastern Plume which extends from the eastern and southern edges of the landfill and discharges to the Cocheco River, and the Southern Plume which extends from the southwestern edge of the landfill towards the Bellamy Reservoir. The MOM component consisted of pumping and treating contaminated groundwater from the Southern Plume while allowing the Eastern Plume to naturally degrade.

A group of Work Settling Defendants (the “Group”) completed the Landfill Cap 100% design in 1996. However, construction of the 1991 ROD remedy was deferred, except for the removal of arsenic-impacted sediments from the drainage swale, while the Group performed a pilot study to determine if an alternative innovative cleanup approach could be used to replace the SC portion of the 1991 ROD remedy. New information developed during that study indicated that another SC remedial alternative was potentially viable.⁶ Based on that information, the

⁴ Quantifying the Bellamy River Watershed Hydrologic Budget, prepared for the Town of Madbury by Thomas Fargo, C.G., January 2002.

⁵ *Amended Record of Decision, Dover Municipal Landfill*, USEPA, Region 1, p. 1-2, September 30, 2004.

⁶ Agency Response to the Draft Final Bioremediation Pilot Assessment, Dover Municipal Landfill, Comment letter from Andrew Hoffman, NHDES, to Dean Peschel, City of Dover, April 23, 2002.

Group offered an alternative remedy (SC-A) to the SC component of the 1991 ROD that would be less expensive and would offer greater flexibility in addressing contamination at the Site. SC-A consisted of an air-sparging trench, sheet piling walls on the northern and southern edges of the landfill, and a groundwater extraction and treatment system on the southwest corner of the landfill to address high concentrations of contaminants. The SC-A proposal was incorporated into the remedy through the 2004 AROD.

In the 2004 AROD, EPA and NHDES concluded that the proposed air-sparging trench had the potential to be as protective as the RCRA-C cap component of the 1991 ROD and to be less expensive. It also appeared that the air-sparging trench had the potential to accelerate the cleanup by decades both through a natural flushing action and by allowing access to source areas inside the landfill. Rather than entombing wastes beneath an impermeable cap that would require perpetual maintenance and operation of wells to lower groundwater within the landfill, contaminants would be naturally flushed out, and active remedies could address individual source areas located within the landfill. The 2004 AROD also established that institutional controls were necessary to prohibit activities on the landfill surface that may create a human health or environmental risk or that may negatively affect the cleanup until the cleanup is complete. Air-sparging would eventually allow the landfill to reach clean closure, at which time the aquifer would be restored to drinking water quality and re-use of the Site would be allowed without further institutional controls. However, considerable uncertainty remained over the ability of the air-sparging trench to be implemented and function as designed. Therefore, as an additional measure of protectiveness, the SC component of the 1991 ROD (*i.e.*, capping the 50-acre landfill with a RCRA-C cap) was retained as a contingent remedy. The MOM remedy from the 1991 ROD was unchanged by the 2004 AROD.

After the 2004 AROD, the Group performed several Pre-Design Investigations (PDIs) and implemented several components of the remedy. PDIs completed as part of the 2004 AROD identified that site-specific conditions would present certain challenges to the treatment trench remedy. Therefore, the 2009 ESD was issued which changed the treatment trench selected in the 2004 AROD to multi-level groundwater extraction within the same footprint as where the treatment trench was to be deployed.

The on-going, site-wide Environmental Monitoring Plan and the results from several PDIs have better refined the understanding of conditions and contamination at the Site. Presently, there are five known areas of contamination: the landfill; the Southern Plume; the Eastern Plume; a surface water ditch that drains the area near the northwest corner of the landfill; and sediments within the eastern ditch, swale, and, potentially, the Cocheco River.

The landfill is the source of arsenic and organic contaminants in the groundwater, surface water and sediments at the Site. Within the landfill, two source areas, one in the northwest corner and the other in the southwest corner, account for most of the organic contaminants present at the Site, although there are some small, isolated areas of contamination. The northwest source area contains significant concentrations of vinyl chloride, benzene, and other hydrocarbons, such as trichloroethylene (TCE), tetrachloroethylene (PCE), and cis-1,2 dichloroethylene (1,2 DCE).

Groundwater in the southwest corner of the Site is significantly less contaminated than the northwest corner and contains mostly THF. This area was to be addressed through a pump-and-treat system under the 2004 AROD. The distribution of THF, vinyl chloride, benzene, dissolved arsenic, and 1,4-dioxane throughout the three stratigraphic units of the Site is shown in Figures 3A, 3B, 3C, 3D, and 3E. Arsenic is present in concentrations above its Interim Cleanup Level in much of the groundwater at the Site.

At the time of the 2004 AROD, COCs in the Southern Plume consisted of benzene, vinyl chloride, 1,2 DCE, arsenic, and THF. These contaminants were above the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) in well SB-B2, which is located approximately halfway between the southwest corner of the landfill and the Bellamy Reservoir. Currently, this well is still showing exceedances of the Interim Cleanup Levels for THF, benzene, and dissolved arsenic. The groundwater monitoring network in 2004 was inadequate to assess whether those contaminants had migrated further towards the Bellamy Reservoir. Therefore, the Dover Group performed a series of PDIs to further assess the Southern Plume area. Currently⁷, benzene and THF exceed the Interim Cleanup Levels in two (SB-B2I and MW-200I) of nine monitoring wells included in the Revised Environmental Monitoring Program (REMP). Arsenic exceeds the Interim Cleanup Level in eight (SB-B2I, MW-200I, SB-GW-3I, SB-GW-3L, MW-201I, MW-201D, and MW-204IB) of the nine REMP monitoring wells. 1,4-dioxane currently exceeds the proposed Cleanup Level in five (SB-B2I, MW-200I, SB-GW-3U, SB-GW-3I, and SB-GW-3L) of the nine REMP monitoring wells and shows increasing concentrations in three of those wells (SB-B2I, MW-200I, and SB-GW-3L) between 2013 and 2020. Sampling performed at additional non-REMP wells in 2019 and 2020 shows that 1,4-dioxane is present in groundwater within the Southern Plume within approximately 150 feet of the Bellamy Reservoir at concentrations more than ten times the proposed Cleanup Level⁸.

While THF was the dominant contaminant in the Southern Plume in 2004 and is still present at concentrations exceeding the Interim Cleanup Level, the greater lateral extent of the 1,4-dioxane impacts, its documented proximity to the Bellamy Reservoir, and much more rapid movement in groundwater, make it the defining contaminant for the leading edge of the Southern Plume.

At the time of the 2004 AROD, contaminants in the Eastern Plume consisted of arsenic, benzene, vinyl chloride, TCE, and PCE. The overall concentration of VOCs and 1,4-dioxane in Eastern Plume monitoring wells seem to demonstrate generally decreasing trends since the SC groundwater extraction system became operational in 2012. As of the 2020 REMP sampling event, conditions in the Eastern Plume area can be summarized as follows:

- seven of the nine REMP Eastern Plume wells are below Interim Cleanup Levels for all VOCs;

⁷ Based on results from the Fall 2020 sampling round as reported in the *2020 Annual Remedy Performance Report, Dover Municipal Landfill Superfund Site, GeoInsight, April 12, 2021*.

⁸ Figure 3E of the *2020 Annual Remedy Performance Report, Dover Municipal Landfill Superfund Site, GeoInsight, April 12, 2021*

- THF is not detected above the proposed Cleanup Level in the nine Eastern Plume wells;
- benzene is above the Interim Cleanup Level in two wells (EP-1I and SC-23D);
- vinyl chloride is above the Interim Cleanup Level in two wells (EP-1I and SC-23D); and
- 1,4-dioxane is above the proposed Cleanup Level in two wells (EP-1I and SC-23D).

Arsenic remains the primary contaminant in the Eastern Plume, exceeding the Interim Cleanup Level in five of the nine REMP wells. Arsenic concentrations are observed to be increasing in three of the five wells where it exceeds the Interim Cleanup Level (SC-22I, EP-1I, and EP-2S).

In 2018, the Dover Group began sampling 22 monitoring wells for per- and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorobutane sulfonate (PFBS), perfluorobutanoic acid (PFBA), perfluoroheptanoic acid (PFHpA), perfluorohexane sulfonate (PFHxS), perfluorohexanoic acid (PFHxA), perfluorononanoic acid (PFNA), and perfluoropentanoic acid (PFPeA). This initial sampling was performed to characterize the type, distribution, and magnitude of PFAS, including evaluating background conditions. Additional sampling of these wells and other wells to complete this characterization was done in 2019 and 2020. In 2021, the Group began sampling four monitoring wells located north of the northern shoreline of the Bellamy Reservoir and surface water locations from three tributaries to the Reservoir. The sampling of these wells and surface water locations will be done quarterly. As part of the second five-year review for the Site, which is underway and will be completed this year, EPA will further evaluate the concentrations of PFAS detected in groundwater and in surface water to determine whether they present a risk to human health or the environment. Depending on the conclusion of these investigations, EPA will decide whether one or more PFAS contaminants should be added as a COC in a future decision document.

B. Summary of the Selected Remedy

1991 Record of Decision (ROD)

The specific elements of the selected remedy identified in the 1991 ROD included:

- recontouring of the existing landfill,
- consolidation of sediments in the perimeter drainage ditch,
- limited excavation and consolidation of sediments in the drainage swale and at the confluence to the Cocheco River,
- capping of the landfill,
- upgradient groundwater diversion,
- groundwater/ leachate collection and treatment,
- pre-design studies which include the installation of additional monitoring wells,
- natural attenuation of the "eastern" plume,
- groundwater extraction and treatment of the "southern" plume,

- long-term environmental monitoring, and
- institutional Controls, where possible.

The 1991 ROD established Interim Cleanup Levels in groundwater for COCs identified in the baseline risk assessment and found to pose an unacceptable risk to either public health or the environment. Interim Cleanup Levels were set based on the pertinent Applicable or Relevant and Appropriate Requirements (ARARs) (e.g., Drinking Water Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs) if available, or other suitable criteria). The 1991 ROD anticipated that EPA would make periodic assessments of the protection afforded by the remedial action as the remedy was being implemented and at the completion of the remedial action. It also specified that at the time that all the Interim Cleanup Levels have been achieved, a risk assessment would be performed on the residual groundwater contamination. This risk assessment of the residual groundwater contamination would follow EPA procedures and would assess the cumulative risks for carcinogens and non-carcinogens posed by consumption of groundwater. If the risks were not within EPA's risk levels for carcinogens and non-carcinogens, then the remedial action would continue until protective levels were attained, or the remedy was otherwise deemed protective. If the remedy was determined to be protective, then the groundwater extraction system would be shut down and a groundwater monitoring system would be utilized for three consecutive years to further ensure that the Interim Cleanup levels have been met and the remedy remains protective.

2004 Amended ROD (AROD)

The 1991 ROD was amended in 2004. The 2004 AROD retained all the components of the 1991 ROD but replaced capping the landfill and capturing leachate with a treatment trench, and retained the cap as a contingency remedy. Because of the innovative nature of the remedy at the time, several PDIs were mandated to better define conditions at the Site.

Although EPA concluded in 1991 that the carcinogenic and non-carcinogenic risks from outdoor air exposures were within EPA's acceptable carcinogenic risk range, remedial action objectives were modified to respond to any potential risk.

2009 Explanation of Significant Differences (ESD)

PDIs completed as part of the 2004 AROD identified that site-specific conditions would present certain challenges to the treatment trench remedy. Therefore, an ESD was issued on June 30, 2009, which changed the treatment trench selected in the 2004 AROD to multi-level groundwater extraction within the same footprint as where the treatment trench was to be deployed.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

A. Addition of 1,4-dioxane as a Contaminant of Concern

This ESD establishes the contaminant 1,4-dioxane as a COC, and the NHDES AGQS of 0.32 µg/L as the Cleanup Level to be attained in the groundwater at and beyond the point of compliance on the entire Site. In 2005, NHDES promulgated an AGQS of 3 µg/L for 1,4-dioxane based on information provided at the time by EPA's Integrated Risk Information System toxicological review. In September 2018, the State of NH lowered the AGQS for 1,4-dioxane to 0.32 µg/L. In January 2008, NHDES required that the groundwater at all sites with hazardous waste be tested for 1,4-dioxane. Subsequently, in May 2009, the contaminant was added to the list of parameters being tested at the Site and was determined to be present above the NHDES AGQS in the northwest portion of the landfill and the Eastern and Southern Plumes.

Currently, there is no federal enforceable drinking water standard for 1,4-dioxane. In 2010, and then updated in 2015, EPA developed a cancer risk screening level for 1,4-dioxane in tap water of 0.46 µg/L using EPA risk assessment guidance. This federal screening level guideline of 0.46 µg/L is equivalent to 1 in one million (or 10^{-6}) cancer risk which is at the most conservative end of EPA's acceptable risk range of 10^{-6} to 10^{-4} . Default exposure assumptions equate a 10^{-4} (or 1 in 10,000) cancer risk to 1,4-dioxane at 46 µg/l, which represents the upper end of the acceptable cancer risk range. Most of the 1,4-dioxane concentrations in the groundwater at the Site exceed this acceptable risk range. As a result, in the First Five Year Review Report for the Site issued in 2017, EPA recommended that 1,4-dioxane be added to the remedy as a COC.

The remedy selected for the Southern Plume was not designed to address 1,4-dioxane. Currently, the MOM remedy for the Southern Plume consists of groundwater extraction, pumping of the groundwater into the SCRA groundwater extraction system, on-site sedimentation, and conveyance of the extracted groundwater to the City of Dover Publicly Owned Treatment Works (POTW) facility. Remedial activities were initiated in 2008 and initially consisted of the seasonal operation of the Southern Plume groundwater extraction system. The Southern Plume groundwater extraction system was operated seasonally from 2008 to 2011. The Source Control groundwater extraction system became operational in 2012, at which time seasonal operation of the Southern Plume groundwater extraction system was stopped so that hydraulic conditions associated with the Source Control groundwater extraction system could be monitored. Seasonal operation of the Southern Plume groundwater extraction system was reestablished on August 13, 2019.⁹

On March 5, 2020¹⁰, due to the presence of 1,4-dioxane in groundwater near the Bellamy Reservoir at levels that exceed both the EPA acceptable risk range for this contaminant (0.46 to 46 µg/L) and the NHDES AGQS (0.32 µg/L), and in anticipation of this ESD, EPA requested that the Group perform a focused feasibility study to identify and evaluate alternatives to address the continuing migration of contamination in the Southern Plume,

⁹ For a summary of operation, maintenance, and monitoring (OMM) activities associated with the groundwater extraction systems in 2020, please see Section 2 of the 2020 Annual Performance Report. Section 3 of that report also provides a summary of performance monitoring activities for 2020.

¹⁰ Letter from Gerardo Millan-Ramos to Dean Peschel re Issue/Recommendation about 1,4-dioxane in First Five Year Review Report and Dover Group's request for THF cleanup level to reflect the current NHDES AGQS. EPA, March 5, 2020.

including 1,4-dioxane, from the landfill to the Bellamy Reservoir. In response, the Group proposed optimizing the Southern Plume groundwater extraction system to address the contaminated plume. The proposed approach will be designed to hydraulically contain the contaminant plume by intercepting the vertical and horizontal extent of the plume that exceeds site Cleanup Levels for any contaminants of concern within a yet to be defined portion of the plume between the SC point of compliance (*i.e.*, the outer edge of the waste management area or “toe of the landfill”) and the northern shore of the Bellamy Reservoir, but upgradient of associated tributaries to the Reservoir. Currently, it is anticipated that this optimization will consist of a combination of extraction and monitoring wells that will achieve and confirm hydraulic containment and, thus, minimize impacts to the Bellamy Reservoir. It is anticipated that the costs of the Southern Plume remedy, including both capital construction costs for the new wells and operation and maintenance costs, will increase because of the addition of 1,4-dioxane as a COC. In addition, it is anticipated that the time to achieve Cleanup Levels in the Southern Plume will increase. However, until the optimization design is complete and approved, EPA cannot estimate the additional costs or remediation timeline. EPA and NHDES will continue to oversee the Group’s design efforts.

B. Modification of Cleanup Levels for Groundwater

This ESD includes a modification of a Cleanup Level for a COC for which the applicable regulatory standard has been changed. Specifically, the Cleanup Level for Tetrahydrofuran (THF) is being changed from 154 µg/L to 600 µg/L. The 1991 ROD identified THF as a COC with an Interim Cleanup Level of 154 ug/L. This 1991 ROD Interim Cleanup Level corresponded to the NH AGQS at the time.

In 2015, NHDES promulgated a less stringent standard of 600 µg/L for the THF AGQS. This ESD changes the THF cleanup level to correspond to the current AGQS of 600 µg/L. The NHDES AGQS falls within EPA’s acceptable risk range and the remedy remains protective. There is presently no federal drinking water standard for THF.

C. Change in Terminology for Groundwater Cleanup Levels

The 1991 ROD, the 2004 AROD and the 2009 ESD established Interim Cleanup Levels for site-related COCs in groundwater. The Interim Cleanup Levels were selected based on MCLs and non-zero MCLGs established under the Safe Drinking Water Act, or more stringent state drinking water or groundwater standards including the NHDES AGQSs. For contaminants without federal/state drinking water standards (ARARs), site-specific, risk based Interim Cleanup Levels were calculated. If a groundwater cleanup value established by any of the methods described above was not capable of being detected with good precision and accuracy or was below what was deemed to be the background value, then the practical quantification limit or background value was selected as the Interim Cleanup Level. This ESD, while not changing most of the numeric groundwater cleanup values, changes the terminology such that the Interim Cleanup Levels for groundwater are now Cleanup Levels for groundwater.

D. Evaluation of Cleanup Level Attainment

The 1991 ROD, as amended in the 2004 AROD, and further modified by the 2009 ESD, described a process for evaluating when groundwater cleanup levels have been achieved. Through this ESD, the evaluation of attainment of groundwater Cleanup Levels is being clarified and updated, as follows:

The determination that groundwater Cleanup Levels have been met will now be based on site-specific considerations. EPA will consider historical and current monitoring data, contaminant distribution, trend analysis, and the appropriateness of the compliance monitoring program (*i.e.*, locations, frequency of monitoring, sampling parameters, etc.). At the time this determination is made, EPA will provide a complete description of this technical evaluation documenting attainment of groundwater Cleanup Levels.

After all groundwater Cleanup Levels have been met, as determined by EPA consistent with Agency guidance available at the time, EPA will perform a risk evaluation which considers additive risk from remaining COCs considering all potential routes of exposure to document the residual risk based on exposure to groundwater at the Site. The residual risk evaluation will document the potential risk associated with the concentrations of COCs remaining in groundwater at the Site (if detected).

This updated approach to evaluating attainment of groundwater Cleanup Levels, protectiveness of the groundwater remedy, and completion of groundwater restoration efforts reflects: 1) acknowledgement that MCLs established under the Safe Drinking Water Act are deemed protective by EPA; 2) consideration of all potential routes of exposure for groundwater; 3) improved methods for assessing data variability and other dynamic aquifer conditions that impact monitoring data; and 4) reliance on up-to-date technical guidance and tools. This updated approach will support determinations when groundwater at the Site has been restored for its permissible, beneficial use, and that the groundwater no longer presents an unacceptable risk to human health due to the presence of site-related contaminants.

IV. SUPPORT AGENCY COMMENTS

EPA has worked cooperatively with NHDES to develop this ESD and NHDES concurs with the changes to the remedy specified in this ESD. (See Attachment 2)

V. STATUTORY DETERMINATION

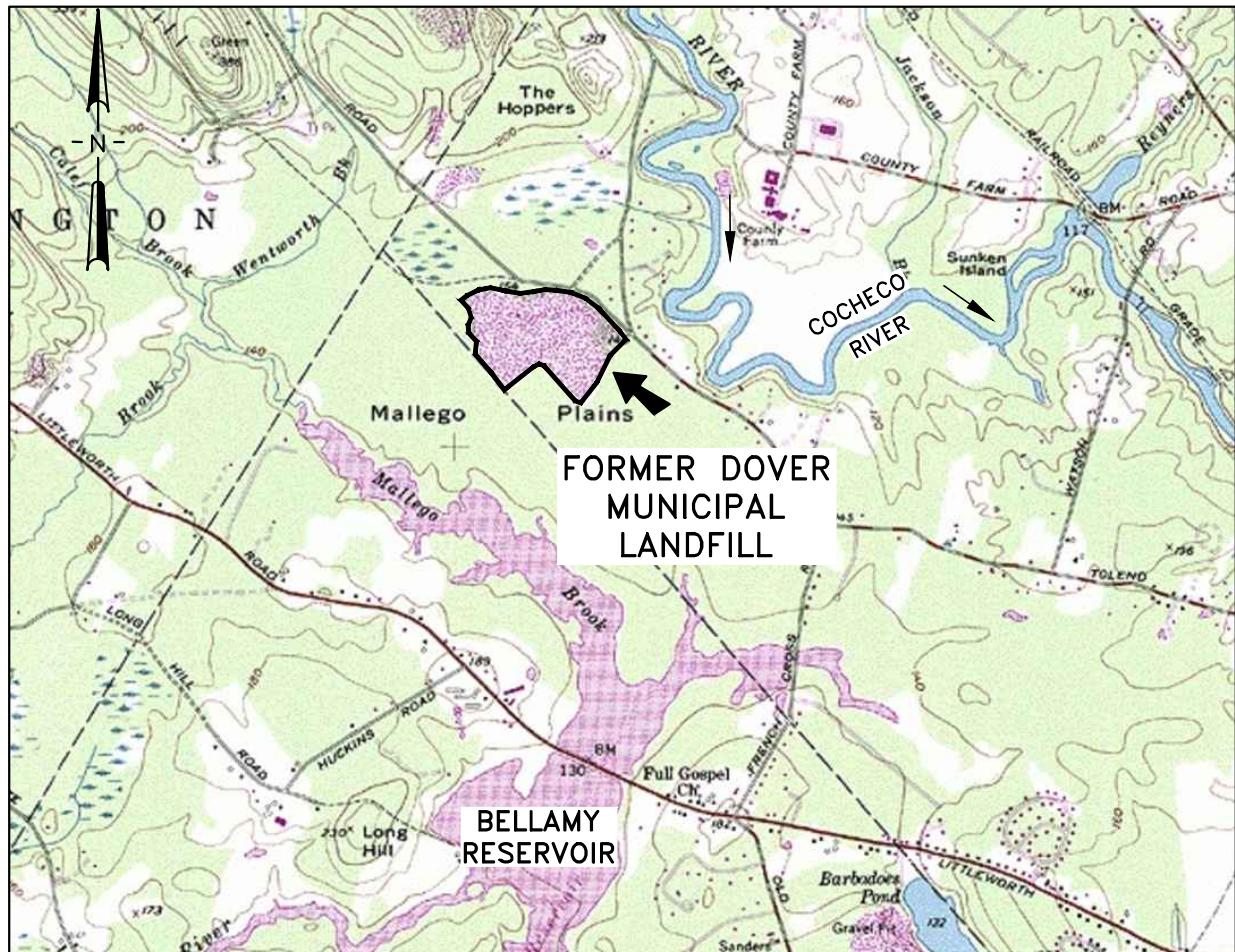
In accordance with Section 121 of CERCLA, EPA, in consultation with NHDES, has determined that the modified remedy remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, meets the remedial action objectives specified in the 1991 ROD, as modified by the 2004 AROD and 2009 ESD, and is cost-effective.

VI. PUBLIC INFORMATION

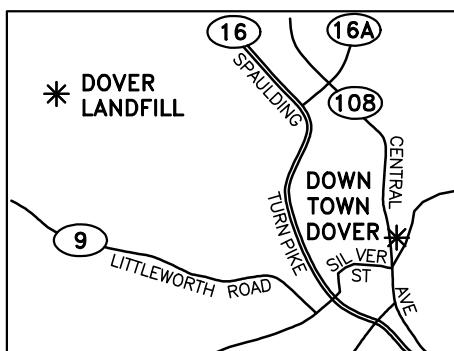
In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, this ESD and the Administrative Record were made available for public review at the locations and times listed in Section I above as well as on the internet at www.epa.gov/superfund/dover. Adobe Reader is required to review the documents. Notice of the release of the ESD was published in a press release on April 27, 2022.

EPA has voluntarily chosen to allow a 14-day public comment period prior to finalization and signing of this ESD. The comment period was initiated upon publication of the draft ESD on April 27, 2022 and ran until May 11, 2022. Public comments received will be addressed in a responsiveness summary that will be attached to the final ESD.

NHDES has reviewed the draft ESD and supports the proposed changes. NHDES will evaluate public comments on the draft ESD before making a final decision on concurrence with the ESD.



SITE AREA PLAN



NOT TO SCALE

0 1/2 MILE 1 MILE

APPROX. SCALE IN FEET

CONTOUR INTERVAL 20 FEET

REFERENCE: TAKEN FROM USGS MAP
"DOVER WEST, NH NW/4 15' QUADRANGLE,
REVISED 1993.

CLIENT: DOVER GROUP				 GeoInsight <i>Practical in Nature</i>	
PROJECT: DOVER MUNICIPAL LANDFILL SUPERFUND SITE DOVER, NEW HAMPSHIRE					
TITLE: SITE LOCUS					
DESIGNED: CAB	DRAWN: NMT	CHECKED: CAB	APPROVED: MJW		
SCALE: 1" = 2000'	DATE: 02/28/14	FILE NO.: 2009-LOCUS	PROJECT NO.: 2009-018	FIGURE NO.: 1 A	

